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**REMARKS**

This paper is responsive to any paper(s) indicated above, and is responsive in any other manner indicated below.

**PAPER(S) MISSED AND/OR NOT ADEQUATELY TREATED IN OFFICE ACTION**

The Office Action missed and/or did not adequately treat at least the following paper(s) filed by Applicant: 18 February 2005 STATEMENT OF SUBSTANCE AND AMENDMENT RESPONSIVE TO EXAMINER INTERVIEW. For convenience and/or for completion of USPTO records, a copy of such paper(s) together with a USPTO date-stamped receipt proving filing, are enclosed herewith. It is respectfully submitted that objections/rejections within the Office Action are erroneous in that they failed to consider Applicant's claims as amended and/or presented within such paper(s), and accordingly, it is respectfully submitted that the Office Action and any objections/rejections therein should be withdrawn. Regarding the missed and/or untreated paper(s), it is respectfully requested that any further action regarding the present application fully treat or consider such paper(s).

**PENDING CLAIMS**

Claims 1-28 were pending, under consideration and subjected to examination in the Office Action. At entry of this paper, Claims 1-28 remain pending for further consideration and examination in the application.

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**'112, 1<sup>ST</sup> PARA. "WRITTEN DESCRIPTION" REJECTION - TRAVESED**

Claims 1-20 have been rejected, under 35 USC '112, first paragraph, as failing to comply with the written description requirement, for the concerns listed within the item 5 on page 3 of the Detailed Action portion of the Office Action.

Traversal is appropriate, because the Office Action listed feature was sufficiently described/taught within Applicant's original disclosure.

The Examiner appears to be setting forth a position that phrases (e.g., "in response to a result of the comparison of a new display data with a previous display data" and "in response to a result of the comparison of a new picture signal with a previous picture signal") used within a claim must be found in the same words within the specification, or else a "written description" rejection is appropriate.

Traversal is appropriate as follows.

First, MPEP 2163 (directed to "written description" guidelines) itself, explicitly states "...there is no *in haec verba* requirement..." (i.e., "in the same words" requirement) with respect to "written description". MPEP 2163 continues to state simply that "...newly added claim limitations must be supported in the specification through express, implicit, or inherent disclosure." MPEP 2163 states two other guidelines of relevance to the present rejection, i.e., "To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention", and secondly, "...the PTO has the initial burden of presenting evidence or reasons why persons skilled in the art would not have recognized in the disclosure a description defined by the

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claims." Here, the Office Action comments have indicated an erroneous understanding of Applicant's second (FIG. 8) embodiment. Accordingly, it is respectfully submitted that the Examiner has not met his/her initial burden to support the "written description" rejection.

It is respectfully submitted that, in the present situation, the Examiner could not adequately support the rejection, because the Applicant's claimed features/limitations are implicitly and/or inherently disclosed within Applicant's specification sufficiently for a skilled artisan to conclude possession of the invention. More particularly, the Examiner erroneously assumes that Applicant's "illumination light controller 122" (FIG. 8) does not itself perform a comparison. Instead, it is respectfully noted that FIG. 8 clearly shows the illumination light controller 122 receiving its own copy of the prior picture (from frame memory 111) and present picture (Data). Applicant's FIG. 9 illustrates graphs with respect to a prior and present picture frame. In FIG. 9, the illumination start time and on time of the left-hand frame are adjusted so that brightness may be equal in each area. A skilled artisan would know that the way this is accomplished is by COMPARING THE PICTURE FRAMES (i.e., one has to compare them to equalize them). In short, a skilled artisan would recognize that a comparison is inherently conducted with respect to the illuminating light controller 122 of the present invention.

In addition to the foregoing, Applicant's foreign representative also supplies the following comments. More particularly, embodiment 1 does not itself support the limitations "in response to a result of the comparison of a new display data with a previous display data" defined in claim 1 and "in response to a result of the comparison of a new Picture data with a previous picture data" defined in claim 11.

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However, according to Embodiment 2, a new display data (new picture signal) and a previous display data (previous picture signal) from the flame memory 111 are inputted to the illumination lighting controller 122 shown in Fig. 8. The illumination lighting controller 122 performs the comparison of the previous display data and the new display data with each other (as in the data emphasis operation circuit 112), and in response to the result thereof, controls an illumination start time and an illumination "on" time of each of the illumination unit.

As far as Embodiment 2, a skilled artisan would recognized that such comparison must be naturally performed in view of the following descriptions in the specification:

- (1) Page 14, lines 13-15—"the average value of the individual gradation weighted with the number of pixels displayed for the individual areas is estimated in real time". This estimation cannot be performed unless the comparison is performed. It is thus apparent from Embodiment 1 and so on that the "on" time and the start time which are optimal for each individual gradation vary according to the new display data, the corresponding previous display data and the amount of overshoot. Therefore, in order to estimate the average value in real time, the comparison and the calculation of the amount of overshoot have to be performed in or by the illumination lighting controller 122 as in the data emphasis operational circuit 112.
- (2) Page 14, lines 19-23—"the time integral values of the transmission factor for the frame in which the transmission factor changes due to the overshoot drive can be precisely identical to the time interval value of the transmission factor for the

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frame in which the transmission factor reaches a designated level and stays in a stable state"

The start time and the "on" time need to be controlled precisely in order to cause the integrated transmission factor for the frame in which the transmission factor is changed and the integrated transmission factor for the frame in which the transmission factor is stable to precisely coincide with each other. Further, in order to control the start time and the "on" time precisely, it is apparent that the previous display data before the transmission factor is changed, the new display data after the transmission factor has been changed, and the amount of overshoot due to the comparison of the previous and new data with each other need to be calculated, respectively.

As readily seen from the above, the comparison of the previous display data and the new data with each other is performed also in or by the illumination lighting controller 122 (as in the data emphasis operational circuit 112) and the illumination start time and the illumination "on" time of each illumination unit is controlled in response to the result of the comparison.

Based upon the foregoing, reconsideration and withdrawal of the above-referenced rejection are respectfully requested. If the Examiner continues such rejection, the Examiner should provide "evidence or reasons why persons skilled in the art would not have recognized in the disclosure a description defined by the claims", as required by MPEP 2163.

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**35 USC §112, SECOND PARA. REJECTION-TRAVERSED/IMPROPER**

Claims 2, 3, 14 and 15 (and Claims 5, 6, 8, 9, 17 and 20) stand rejected under 35 USC §112, second paragraph, for the Office Action concerns listed at Items 6-8 on pages 3 and 4 of the Office Action. Applicant respectfully traverses the rejection, and respectfully submits that the rejection is unsupported for the following reasons.

IT IS RESPECTFULLY SUBMITTED THAT THE EXAMINER IS INCORRECTLY IGNORING MPEP AND COURT GUIDANCE REGARDING USAGE OF "SUBSTANTIALLY", I.E., BOTH THE USPTO AND THE COURTS EXPLICITLY CONDONE THE USAGE OF "SUBSTANTIALLY" AND DO NOT CONSIDER THE SAME TO BE INDEFINITE. IN FACT, THE VALIDATING USAGE EXAMPLE SET FORTH WITHIN THE MPEP IS VERY CLOSE TO THE PRESENT USAGE.

More particularly, as indicated at MPEP §2173.05(b), the term "substantially" may very well be used in conjunction with another term to describe a particular characteristic of the claimed invention, and such terms are definite. As one very relevant example described in the MPEP, the Court in *Andrew Corp. v. Gabriel Electronics*, 847 F.2d 819, 6 USPQ2d 2010 (Fed. Cir. 1988) ruled that the limitation "which produces substantially equal E and H plane illumination patterns" was definite because one of ordinary skill in the art would know what was meant by "substantially equal."

Likewise, Applicant respectfully submits that the term "substantially identical" in the present application also is definite, since one of ordinary skill would know what such term means in context with Claims 2, 3, 14 and 15 (and Claims 5, 6, 8, 9, 17

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and 20). More particularly, given that inventors/USPTO/court recognize that it is nearly impossible (e.g., because of manufacturing tolerances, calculation limitations, etc.) to make something "identical," the word "substantially" is very commonly used, and widely accepted, in many patented claims to account for acceptable variation.

In view of the above, Applicant respectfully submits requests reconsideration and withdrawal of the rejection under 35 USC §112, second paragraph.

#### **REJECTION UNDER 35 USC §103 - TRAVERSED**

The 35 USC §102 rejection of Claims 1-20 stand unpatentable over Okumura et al. (US 6,115,018 A) in view of Chen (US 5,592,193 A) is respectfully traversed. Such rejection has been made obsolete by the present clarifying amendments to the claims, and accordingly, traversal arguments are not appropriate at this time. However, Applicant respectfully submits the following to preclude further rejection of the claims.

All descriptions of Applicants disclosed and claimed invention, and all descriptions and rebuttal arguments regarding the applied prior art, as previously submitted by Applicant in any form, are repeated and incorporated herein by reference. Further, all Office Action statements regarding the prior art rejections are respectfully traversed.

As set out in the decision *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988), the court points out that the PTO has the burden under §103 to establish a *prima facie* case of obviousness, and can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill

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in the art would lead that individual to combine the relevant teachings of the references. However, the cited prior art does not adequately support a §103 obviousness-type rejection because it does not, at minimum, disclose (or suggest) the following limitations of Applicant's clarified claims.

More particularly, Applicant's disclosed and claimed combination invention is directed toward liquid crystal display arrangements (e.g., apparatus, methods) allowing generation/display of high quality motion pictures with less after image when displaying motion pictures, and with less fuzzy images due to equalization. Applicant found that such could be accomplished by comparing a prior image together with a present image, and then adjusting both of an LCD's illumination start/on times responsive to a result of the comparison. Accordingly, in terms of claim language, Applicant's independent Claims 1 and 11, for example, contains the features/limitations: "illumination control means for controlling an illumination start time and an illumination "on" time of each of the illumination areas of the illumination unit in response to a result of the comparison of a new display data with a previous display data." Added independent Claims 20 and 21 have similar limitations.

**Added independent Claim 23 specifically recites "illumination control means for independently adjusting an instance of an illumination start time and a length of an illumination "on" time of each of the illumination areas of the illumination unit in response to real-time analysis of the new display data together with the previous display data. Added dependent Claims 25-28 add similar features limitations to independent Claims 1, 11, 21 and 22, respectively.**

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Regarding rebuttal of the applied art, Okumura *et al.* (US 6,115,018 A) is directed to an active matrix liquid crystal display device arrangement, wherein a differing (voltage) type of adjustment appears to be conducted, and in a differing way (from Applicant's claimed invention). More particularly, Okumura *et al.*'s Column 3, lines 41-46, states, "[w]ith the above arrangement, for a motion image with a change in pixel potential, a voltage to be applied to the liquid crystal can be corrected in advance to emphasize the change without using any frame memory or field memory so that high-quality display with an improved after-image characteristic can be realized." First, it is respectfully noted that Okumura *et al.* is correcting "voltage," as opposed to Applicant's "start/on times." In fact, Okumura *et al.*'s Column 8, lines 7 and 8, clearly states that correction is done at "arbitrary timing." Second, given that Okumura *et al.*'s arrangement does not use any frame memory or field memory, there appears to be no comparison within Okumura et al. with any "prior image data" (*i.e.*, there would be nothing to store the prior image data). Clearly, Okamura *et al.* teaches away from Applicant's disclosed and claimed invention.

Chen (US 5,592,193 A) is directed to a backlighting arrangement for an LCD display panel realizing improved efficiencies. In order to accomplish the same, the Chen arrangement utilizes a plurality of lights along the backlighting arrangement, and actuates each of the light sources in a sequential manner synchronously (e.g., from top to bottom) for illuminating only that portion of the display panel providing a video image at a given time (see sequence of Chen's FIGS. 4-6). Chen (like Okumura *et al.*) nowhere discloses any comparing of a prior image together with a

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present image, and then adjusting both of an LCD's illumination start/on times responsive to a result of the comparison.

**THE EXAMINER CONTINUES TO IGNORE THE MAJOR DEFICIENCIES**  
**WITH RESPECT TO THE APPLIED REFERENCES, I.E., NEITHER DOES**  
**COMPARING OR START/STOP CONTROLLING.** Given that neither reference discloses any image comparing or start/on time adjustment responsive to comparison, it is respectfully submitted that the applied references, whether taken respectively alone, or taken in combination, would not have disclosed or suggested Applicant's invention.

In addition to the foregoing, the following additional remarks from Applicant's foreign representative are also submitted in support of traversal of the rejection and patentability of Applicant's claims.

The word "response" in this application is indicative of the time change in the transmission factor for a certain area when the display of the liquid crystal display device is changed. The word is used when the display is changed from white to black or when a moving image is displayed. Therefore, it is not used in connection with the movement of the scanning line.

Chen discloses an illumination unit having a plurality of illumination areas illuminating corresponding areas of the liquid crystal display, respectively (see Fig. 3, elements 64, 64a-j, and 62), and means for controlling the individual areas for illumination (see Fig. 8, element 66). However, Chen fails to disclose or teach "controlling an illumination start time" and an illumination "on" time of each of the illumination areas of the illumination unit in response to a response of the liquid crystal display part" as alleged by the Examiner.

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The Examiner refers to column 4, line 28 to column 5, line 6 of Chen in connection with its illumination unit. In Chen, however, the description concerning the control of the illumination unit 64a-j is merely made at column 4, line 55 to column 5, line 6. Especially, at column 4, line 67 to column 5, line 6, the following is described:

"The display/backlight panel synchronized driver 64 (this should be read 66) actuates each of the light-emitting zone 64a-64j in a sequential manner downwardly in the direction of arrow 74. This downward "ON" sequencing of the light-emitting zones 64a-64j is performed synchronously with sequential actuation of the LCD panel's scanning electrode arrays."

As readily seen, though Chen discloses that the "ON" sequencing of the light-emitting zones 64a-64j is synchronized with the sequential actuation of the LCD panel's scanning electrode arrays, it does not teach that the "ON" sequence is changed according to not only the time change in the transmittance (transmission factor) but also the result of the comparison of a new display data and a previous display data.

The "ON" sequencing corresponds to "a start time" of the present invention. Therefore, Chen teaches nothing about the feature of controlling an "on" time of the present invention. This is clear in view of the fact that, although in the description in column 4, line 23 to column 5, line 6 pointed out by the Examiner the term "ON" appears 8 times, it has nothing to do with the "on" time of the present invention. Incidentally, "ON" in column 4, line 40; column 4, line 44 and column 5, line 3 relates only to an "ON" state of the liquid crystal and not an "on" time or an "on" state of the

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light-emitting zone 64a-j. Further, "ON" in column 5, line 3 relates only to the "ON" sequencing.

As to claims 2 et seq., the Examiner indicates, while referring to column 4, line 28 to column 5, line 8 of Chen, that the illumination control means controls the illumination start time and the illumination "on" time of a corresponding of the illumination area of the illumination unit so that a time integral value of an amount of light passing through the corresponding pixel while a display characteristics are changing is substantially identical to a time integral value of an amount of light passing through the corresponding pixel while the display characteristics are stable. However, Chen fails to teach or suggest, in the above location pointed out by the Examiner, means for controlling the "on" time and. the feature "time integral value of an amount of light passing through the corresponding pixel" of the present invention.

As a result of all of the foregoing, it is respectfully submitted that the applied art would not support a §103 obviousness-type rejection of Applicant's claims. Accordingly, reconsideration and withdrawal of such §103 rejection, and express written allowance of all of the rejected claims, are respectfully requested.

#### **EXAMINER INVITED TO TELEPHONE**

The Examiner is herein invited to telephone the undersigned attorneys at the local Washington, D.C. area telephone number of 703/312-6600 for discussing any Examiner's Amendments or other suggested actions for accelerating prosecution and moving the present application to allowance.

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#### **RESERVATION OF RIGHTS**

It is respectfully submitted that any and all claim amendments and/or cancellations submitted within this paper and throughout prosecution of the present application are without prejudice or disclaimer. That is, any above statements, or any present amendment or cancellation of claims (all made without prejudice or disclaimer), should not be taken as an indication or admission that any objection/rejection was valid, or as a disclaimer of any scope or subject matter. Applicant respectfully reserves all rights to file subsequent related application(s) (including reissue applications) directed to any/all previously claimed limitations/features which have been subsequently amended or cancelled, or to any/all limitations/features not yet claimed, i.e., Applicant continues (indefinitely) to maintain no intention or desire to dedicate or surrender any limitations/features of subject matter of the present application to the public.

#### **CONCLUSION**

In view of the foregoing amendments and remarks, Applicant respectfully submits that the claims listed above as presently being under consideration in the application are now in condition for allowance.

To the extent necessary, Applicant petitions for an extension of time under 37 CFR 1.136. Authorization is herein given to charge any shortage in the fees, including extension of time fees and excess claim fees, to Deposit Account No. 01-2135 (Case No. 503.39221CX1) and please credit any excess fees to such deposit account.

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Based upon all of the foregoing, allowance of all presently-pending claims is  
respectfully requested.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP



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Enclosures:

copy of 18 February 2005 STATEMENT OF SUBSTANCE AND  
AMENDMENT RESPONSIVE TO EXAMINER INTERVIEW  
copy of 18 February 2005 USPTO-stamped filing receipt postcard

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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Tsunenori YAMAMOTO et al.  
Serial No. : 10/735,725  
Filed : 16 December 2003  
For : LIQUID CRYSTAL DISPLAY APPARATUS  
Group AU : 2673  
Examiner : J.J. Piziali  
Conf. No. : 3672

STATEMENT OF SUBSTANCE  
AND  
AMENDMENT RESPONSIVE TO EXAMINER INTERVIEW

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

18 February 2005

Sir:

Responsive to a 15 February 2005 Examiner Interview regarding the subject application, the following amendments and remarks are respectfully submitted.

In accordance with 37 CFR §1.121 in the Final Rule effective 30 July 2003, and as revised in the Final Rule effective 21 October 2004, each section of amendment begins on a new page, and changes are shown by strike-through (or double brackets where appropriate) and underlining to indicate deletions and additions, respectively. A complete listing of all claims ever presented in the application is given with the current status of each claim, and only the text of all pending and withdrawn claims is presented in full, with those pending/withdrawn claims not being amended herein being presented in clean version.

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**IN THE CLAIMS:**

1. (Previously Presented) A liquid crystal display apparatus comprising:
  - a pair of substrates, at least one of which is transparent;
  - a liquid crystal layer disposed between the pair of substrates;
  - a plurality of groups of electrodes disposed on at least one of the pair of substrates for applying an electric field to the liquid crystal layer;
  - a liquid crystal display part having a plurality of active elements connected to the electrodes;
  - drive means, supplied with display data from means for supplying data to be displayed, for driving individual pixels of the liquid crystal display part by applying a voltage corresponding to the display data to the individual pixels, the drive means including data emphasis means for comparing new display data supplied from the means for supplying data to be displayed with previous display data supplied from the means for supplying data to be displayed, and for emphasizing and converting the new display data to designated display data in response to a result of the comparison and the supplied data;
  - an illumination unit including a plurality of illumination areas for illuminating the liquid crystal display part; and
  - illumination control means for controlling an illumination start time and an illumination "on" time of each of the illumination areas of the illumination unit in response to a result of the comparison of a new display data with a previous display data.

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2. (Original) A liquid crystal display apparatus according to claim 1,  
wherein in case that any change is detected in the display data by the  
comparison, the data emphasis means emphasizes and converts the new display  
data so as to increase the change, and modifies a response of a corresponding pixel  
of the liquid crystal display part so as to be larger than a value corresponding to an  
original value of the new display data; and

wherein the illumination control means controls the illumination start time and  
the illumination "on" time of a corresponding one of the illumination areas of the  
illumination unit so that a time integral value of an amount of light passing through  
the corresponding pixel while a display characteristic is changing is substantially  
identical to a time integral value of an amount of light passing through the  
corresponding pixel while the display characteristic is stable.

3. (Original) A liquid crystal display apparatus according to claim 1,  
wherein in case that any change is detected in the display data by the  
comparison, the data emphasis means emphasizes and converts the new display  
data so as to increase the change, and modifies a response of a corresponding pixel  
of the liquid crystal display part so as to be larger than a value corresponding to an  
original value of the new display data; and

wherein the illumination control means controls the illumination start time and  
the illumination "on" time of a corresponding one of the illumination areas of the  
illumination unit so that visual sensation values with respect to light passing through

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the corresponding pixel in the course of response and after response are substantially identical to each other.

4. (Original) A liquid crystal display apparatus according to claim 1, wherein the illumination start time and the illumination "on" time of the illumination areas of the illumination unit are predefined so as to be equal to average values of values for all the display data dependent on the individual display data according to the response of the liquid crystal display part after data conversion.

5. (Original) A liquid crystal display apparatus according to claim 2, wherein the illumination start time and the illumination "on" time of the illumination areas of the illumination unit are predefined so as to be equal to average values of values for all the display data dependent on the individual display data according to the response of the liquid crystal display part after data conversion.

6. (Original) A liquid crystal display apparatus according to claim 3, wherein the illumination start time and the illumination "on" time of the illumination areas of the illumination unit are predefined so as to be equal to average values of values for all the display data dependent on the individual display data according to the response of the liquid crystal display part after data conversion.

7. (Original) A liquid crystal display apparatus according to claim 1, wherein the illumination start time and the illumination "on" time of the illumination areas of

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the illumination unit are changed adaptively and determined so as to be average values weighted with a number of display data to be displayed at an area among values dependent on the individual display data according to the response of the liquid crystal display part after data emphasis and conversion.

8. (Original) A liquid crystal display apparatus according to claim 2, wherein the illumination start time and the illumination "on" time of the illumination areas of the illumination unit are changed adaptively and determined so as to be average values weighted with a number of display data to be displayed at an area among values dependent on the individual display data according to the response of the liquid crystal display part after data emphasis and conversion.

9. (Original) A liquid crystal display apparatus according to claim 3, wherein the illumination start time and the illumination "on" time of the illumination areas of the illumination unit are changed adaptively and determined so as to be average values weighted with a number of display data to be displayed at an area among values dependent on the individual display data according to the response of the liquid crystal display part after data emphasis and conversion.

10. (Original) A liquid crystal display apparatus according to claim 1, wherein the light source includes a sheet-type light emitting element.

11. (Previously Presented) A liquid crystal display apparatus comprising:

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a liquid crystal display part for displaying a picture signal;  
drive means for driving the liquid crystal display part, the drive means  
including picture signal emphasis means for comparing a new picture signal supplied  
from means for supplying a picture signal with a previous picture signal supplied  
from means for supplying a picture signal, and emphasizing and converting the new  
picture signal in response to a result of the comparison and the supplied picture  
signal;

at least one light source; and

an illumination unit including a light amount adjusting part for adjusting an  
amount of light from the light source for a plurality of illumination areas of the  
illumination unit; and

illumination control means for controlling the light amount adjusting part of the  
illumination unit in response to a result of the comparison of a new picture signal with  
a previous picture signal, to control a lighting timing and a lighting period of time of  
the light source.

12. (Original) A liquid crystal display apparatus according to claim 11,  
wherein the light amount adjusting part of the illumination unit is transparent to light  
when a voltage is not applied to the light amount adjusting part.

13. (Original) A liquid crystal display apparatus according to claim 11,  
wherein the light source includes a sheet-type light emitting element.

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14. (Original) A liquid crystal display apparatus according to claim 11,  
wherein in case that any change is detected in the picture signal by the  
comparison, the picture signal emphasis means emphasizes and converts the new  
picture signal so that a display of a corresponding pixel in the liquid crystal display  
part is changed with a value more than a value corresponding to an original picture  
signal by arrival of a next picture signal; and

wherein the illumination control means controls the light amount adjusting part  
of the illumination unit so that a time integral value of an amount of light passing  
through the corresponding pixel while the display of the corresponding pixel is  
changing is substantially identical to a time integral value of an amount of light  
passing through the corresponding pixel while the display of the corresponding pixel  
is stable.

15. (Original) A liquid crystal display apparatus according to claim 11,  
wherein in case that any change is detected in the picture signal by the  
comparison, the picture signal emphasis means emphasizes and converts the new  
picture signal so that the change increases, and changes a display of a  
corresponding pixel in the liquid crystal display part with a value more than a value  
corresponding to an original picture signal by an arrival of next picture signal; and

wherein the illumination control means controls the light amount adjusting part  
of the illumination unit so that visual sensation values with respect to the light  
passing through the corresponding pixel in the course of response and after  
response are substantially identical to each other.

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16. (Original) A liquid crystal display apparatus according to claim 11, wherein the lighting timing and the lighting period of time of the light source are predefined so as to be average values of values for all the display data dependent on the individual display data according to the response of the liquid crystal display part after data conversion.

17. (Original) A liquid crystal display apparatus according to claim 14, wherein the lighting timing and the lighting period of time of the light source are predefined so as to be average values of values for all the display data dependent on the individual display data according to the response of the liquid crystal display part after data conversion.

18. (Original) A liquid crystal display apparatus according to claim 11, wherein the lighting timing and the lighting period of time of the light source are changed adaptively and determined so as to be average values weighted with the number of display data to be displayed at an area illuminated by the illumination unit among values dependent on the individual display data according to the response of the liquid display part after data emphasis and conversion.

19. (Original) A liquid crystal display apparatus according to claim 12, wherein the lighting timing and the lighting period of time of the light source are changed adaptively and determined so as to be average values weighted with the number of display data to be displayed at an area illuminated by the illumination unit

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among values dependent on the individual display data according to the response of the liquid display part after data emphasis and conversion.

20. (Original) A liquid crystal display apparatus according to claim 14, wherein the lighting timing and the lighting period of time of the light source are changed adaptively and determined so as to be average values weighted with the number of display data to be displayed at an area illuminated by the illumination unit among values dependent on the individual display data according to the response of the liquid display part after data emphasis and conversion.

21. (Previously Presented) A liquid crystal display apparatus comprising:  
a pair of substrates, at least one of which is transparent;  
a liquid crystal layer disposed between the pair of substrates;  
a plurality of groups of electrodes disposed on at least one of the pair of substrates for applying an electric field to the liquid crystal layer;  
a liquid crystal display part having a plurality of active elements connected to the electrodes;  
drive means, supplied with display data from means for supplying data to be displayed, for driving individual pixels of the liquid crystal display part by applying a voltage corresponding to the display data to the individual pixels, the drive means including data emphasis means for comparing new display data supplied from the means for supplying data to be displayed with previous display data supplied from the means for supplying data to be displayed, and for emphasizing and converting

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the new display data to designated display data in response to a result of the comparison and the supplied data;

an illumination unit including a plurality of illumination areas for illuminating the liquid crystal display part; and

illumination control means for controlling an illumination start time and an illumination "on" time of each of the illumination areas of the illumination unit, the illumination start time and the illumination "on" time are adjusted to be equal to the average of the optimum values for all the individual gradations to be covered.

22. (Previously Presented) A liquid crystal display apparatus comprising:
- a pair of substrates, at least one of which is transparent;
  - a liquid crystal layer disposed between the pair of substrates;
  - a plurality of groups of electrodes disposed on at least one of the pair of substrates for applying an electric field to the liquid crystal layer;
  - a liquid crystal display part having a plurality of active elements connected to the electrodes;
  - drive means, supplied with display data from means for supplying data to be displayed, for driving individual pixels of the liquid crystal display part by applying a voltage corresponding to the display data to the individual pixels, the drive means including data emphasis means for comparing new display data supplied from the means for supplying data to be displayed with previous display data supplied from the means for supplying data to be displayed, and for emphasizing and converting

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the new display data to designated display data in response to a result of the comparison and the supplied data;

an illumination unit including a plurality of illumination areas for illuminating the liquid crystal display part; and

illumination control means for controlling an illumination start time and an illumination "on" time of each of the illumination areas of the illumination unit in response to a transition of transmittance of the liquid crystal layer.

23. (New) A liquid crystal display apparatus comprising:
  - a pair of substrates, at least one of which is transparent;
  - a liquid crystal layer disposed between the pair of substrates;
  - a plurality of groups of electrodes disposed on at least one of the pair of substrates for applying an electric field to the liquid crystal layer;
  - a liquid crystal display part having a plurality of active elements connected to the electrodes;
  - drive means for driving individual pixels of the liquid crystal display part by applying a voltage corresponding to display data to the individual pixels, the drive means including data emphasis means for comparing new display data with previous display data, and for emphasizing and converting the new display data to designated display data in response to a result of the comparison and the supplied data;
  - an illumination unit including a plurality of illumination areas for illuminating the liquid crystal display part; and

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illumination control means for independently adjusting an instance of an illumination start time and a length of an illumination "on" time of each of the illumination areas of the illumination unit in response to real-time analysis of the new display data together with the previous display data.

24. (New) A liquid crystal display apparatus according to claim 23, wherein the real-time analysis is a weighted analysis of the new display data together with the previous display data.

25. (New) A liquid crystal display apparatus according to claim 1, wherein the controlling is an independent adjusting of the instance of the illumination start time and a length of the illumination "on" time of each of the illumination areas of the illumination unit in response to real-time analysis of the new display data together with the previous display data.

26. (New) A liquid crystal display apparatus according to claim 11, wherein the control is an independent adjusting of an instance of an illumination start time and a length of an illumination "on" time of each of the illumination areas of the illumination unit in response to real-time analysis of the new picture signal together with the previous picture signal.

27. (New) A liquid crystal display apparatus according to claim 21, wherein the controlling is an independent adjusting of the instance of the illumination start

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time and a length of the illumination "on" time of each of the illumination areas of the illumination unit in response to real-time analysis of the new display data together with the previous display data.

28. (New) A liquid crystal display apparatus according to claim 22, wherein the controlling is an independent adjusting of the instance of the illumination start time and a length of the illumination "on" time of each of the illumination areas of the illumination unit in response to real-time analysis of the new display data together with the previous display data.

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### REMARKS

This Amendment is responsive to the Examiner Interview identified below, and is further responsive in any other manner indicated below.

### EXAMINER INTERVIEW ACKNOWLEDGED

This acknowledges the Examiner Interview conducted 15 February 2005 by and between (as indicated on the Interview Summary document) assigned Examiner Jeff Piziali and attorney Paul J. Skwierawski. More particularly, any foregoing amendments may include amendments discussed during, or resultant from, the Examiner Interview, and/or the following may include a reiteration of discussions/arguments had during the Examiner Interview.

### PENDING CLAIMS

Claims 1-22 were pending in the application, under consideration and subject to examination at the time of the Office Action. Unrelated to any prior art, scope or rejection, appropriate Claims have been amended, added or deleted in order to adjust a clarity and/or focus of Applicant's claimed invention. That is, the amendments to the claims are unrelated to any prior art or scope adjustment, and are simply clarified claims in which Applicant is presently interested. At entry of this paper, Claims 1-28 are now pending in the application for consideration and examination.

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### **§112, FIRST PARAGRAPH REJECTION-OBSOLETE VIA CLAIM AMENDMENT**

The 35 USC §112, first paragraph, arguments supplied with Applicant's prior 25 January 2005 Amendment are reiterated, but slightly corrected and supplemented as follows (**see bold areas**).

Claim 1 (and Claims 2-10) and Claim 11 (and Claims 12-20) were rejected under 35 USC §112, first paragraph, for the concerns listed at Items 3 and 4 on pages 2 and 3 of the Office Action. Unrelated to any prior art, scope or rejection, appropriate amendments have been made in order to clarify Claims 1 and 11.

Additionally, Applicant's foreign representative submits the following remarks in traverse and for reconsideration of such rejection.

As to Item 3 on pages 2 and 3 of the Office Action, the Examiner states "Claims 1 and 11 are rejected under 35 USC §112, first paragraph, as failing to comply with the written description requirement." The Examiner indicates that "the light control circuit remains independent from the comparison result of data emphasis operational circuit." However, when viewing from the wiring constitution shown, e.g., in Fig. 8, Applicant respectfully submits that such characterization is inaccurate.

More particularly, Claims 1 and 11 are expressed definitely by the constitution shown in Fig. 8, which accurately illustrates that "the light control circuit controls the lighting time according to the comparison result of the new display data and the previous display data." Applicant respectfully points out that Fig. 8 shows that the light control circuit supplies the new display data from "DATA," and from "FRAME MEMORY," the light control unit supplies the previous display data from "FRAME

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**MEMORY**". That is, in Fig. 8, in the illumination lighting controller 22, the "new display data" is supplied from "DATA" and the "previous display data" is supplied from "FRAME MEMORY 111." The "new display data" and the "previous display data" are compared in the illumination lighting controller 22. Such facts are clearly disclosed in the wiring constitution of Fig. 8, and clearly support the features/limitations of Claims 1 and 11.

Further, such is also supported by Applicant's originally-filed specification. More particularly, specification page 8, lines 6-9, states that with respect to a first embodiment (FIG. 1), the image data (i.e., the "new display data" and the "previous display data") is stored in a frame memory 111, and compared by the emphasis operational circuit 112. In contrast, the specification at page 14, lines 15-17, states that with respect to a second embodiment (FIG. 8), estimates are done in real time and the illumination start/on times are controlled adaptively, and "[f]or this reason, the image data is supplied to the illumination lighting controller 188 in FIG. 8."

**Added independent claim 23 (and claims dependent therefrom) also avoid any §112, first paragraph, problems, by using differing (alternative) features/limitations/language.**

**During the aforementioned Examiner Interview, the Examiner indicated that Applicant's 25 January 2005 Amendment initially appeared (from the Examiner's initial cursory review) to overcome the §112, first paragraph, rejection, but the Examiner also indicated that the Examiner could give no guarantee of the same, and further Examiner consideration was required.**

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In view of the above, Applicant respectfully requests reconsideration and withdrawal of the rejection of Claims 1 and 11 under §112, first paragraph.

**35 USC §112, SECOND PARA. REJECTION-TRAVERSED/IMPROPER**

The arguments supplied with Applicant's prior 25 January 2005 Amendment are reiterated, but slightly corrected and supplemented as follows (**see bold areas**).

Claims 2, 3, 14 and 15 (and Claims 5, 6, 8, 9, 17 and 20) were rejected under 35 USC §112, second paragraph, for the Office Action concerns listed at Items 6-8 on pages 3 and 4 of the Office Action. Applicant respectfully traverses the rejection, and respectfully submits that the rejection is unsupported for the following reasons.

As indicated at MPEP §2173.05(b), the term "substantially" may very well be used in conjunction with another term to describe a particular characteristic of the claimed invention, and such terms are definite. As one very relevant example described in the MPEP, the Court in *Andrew Corp. v. Gabriel Electronics*, 847 F.2d 819, 6 USPQ2d 2010 (Fed. Cir. 1988) ruled that the limitation "which produces substantially equal E and H plane illumination patterns" was definite because one of ordinary skill in the art would know what was meant by "substantially equal."

Likewise, Applicant respectfully submits that the term "substantially identical" in the present application also is definite, since one of ordinary skill would know what such term means in context with Claims 2, 3, 14 and 15 (and Claims 5, 6, 8, 9, 17 and 20). More particularly, given that inventors/USPTO/court recognize that it is nearly impossible (e.g., because of manufacturing tolerances, calculation limitations, etc.) to make something "identical," the word "substantially" is

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**very commonly used, and widely accepted, in many patented claims to account for acceptable variation.**

In view of the above, Applicant respectfully submits requests reconsideration and withdrawal of the rejection under 35 USC §112, second paragraph.

#### **REJECTION UNDER 35 USC §103 - TRAVERSED**

The arguments supplied with Applicant's prior 25 January 2005 Amendment are reiterated, but slightly supplemented as follows (**see bold areas**).

The 35 USC §102 rejection of Claims 1-20 as being unpatentable over Okumura *et al.* (US 6,115,018 A) in view of Chen (US 5,592,193 A) is respectfully traversed. Such rejection has been made obsolete by the present clarifying amendments to the claims, and accordingly, traversal arguments are not appropriate at this time. However, Applicant respectfully submits the following to preclude further rejection of the claims.

All descriptions of Applicants disclosed and claimed invention, and all descriptions and rebuttal arguments regarding the applied prior art, as previously submitted by Applicant in any form, are repeated and incorporated herein by reference. Further, all Office Action statements regarding the prior art rejections are respectfully traversed.

As set out in the decision *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988), the court points out that the PTO has the burden under §103 to establish a *prima facie* case of obviousness, and can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill

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in the art would lead that individual to combine the relevant teachings of the references. However, the cited prior art does not adequately support a §103 obviousness-type rejection because it does not, at minimum, disclose (or suggest) the following limitations of Applicant's clarified claims.

More particularly, Applicant's disclosed and claimed combination invention is directed toward liquid crystal display arrangements (e.g., apparatus, methods) allowing generation/display of high quality motion pictures with less after image when displaying motion pictures, and with less fuzzy images due to equalization. Applicant found that such could be accomplished by comparing a prior image together with a present image, and then adjusting both of an LCD's illumination start/on times responsive to a result of the comparison. Accordingly, in terms of claim language, Applicant's Independent Claims 1 and 11, for example, contains the features/limitations: "illumination control means for controlling an illumination start time and an illumination "on" time of each of the illumination areas of the illumination unit in response to a result of the comparison of a new display data with a previous display data." Added independent Claims 20 and 21 have similar limitations.

**Added independent Claim 23 specifically recites "illumination control means for independently adjusting an instance of an illumination start time and a length of an illumination "on" time of each of the illumination areas of the illumination unit in response to real-time analysis of the new display data together with the previous display data. Added dependent Claims 25-28 add similar features limitations to independent Claims 1, 11, 21 and 22, respectively.**

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Regarding rebuttal of the applied art, Okumura et al. (US 6,115,018 A) is directed to an active matrix liquid crystal display device arrangement, wherein a differing (voltage) type of adjustment appears to be conducted, and in a differing way (from Applicant's claimed invention). More particularly, Okumura et al.'s Column 3, lines 41-46, states, "[w]ith the above arrangement, for a motion image with a change in pixel potential, a voltage to be applied to the liquid crystal can be corrected in advance to emphasize the change without using any frame memory or field memory so that high-quality display with an improved after-image characteristic can be realized." First, it is respectfully noted that Okumura et al. is correcting "voltage," as opposed to Applicant's "start/on times." In fact, Okumura et al.'s Column 8, lines 7 and 8, clearly states that correction is done at "arbitrary timing." Second, given that Okumura et al.'s arrangement does not use any frame memory or field memory, there appears to be no comparison within Okumura et al. with any "prior image data" (*i.e.*, there would be nothing to store the prior image data). Clearly, Okamura et al. teaches away from Applicant's disclosed and claimed invention.

Chen (US 5,592,193 A) is directed to a backlighting arrangement for an LCD display panel realizing improved efficiencies. In order to accomplish the same, the Chen arrangement utilizes a plurality of lights along the backlighting arrangement, and actuates each of the light sources in a sequential manner synchronously (e.g., from top to bottom) for illuminating only that portion of the display panel providing a video image at a given time (see sequence of Chen's FIGS. 4-6). Chen (like Okumura et al.) nowhere discloses any comparing of a prior image together with a

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present image, and then adjusting both of an LCD's illumination start/on times responsive to a result of the comparison.

Given that neither reference discloses any image comparing or start/on time adjustment responsive to comparison, it is respectfully submitted that the applied references, whether taken respectively alone, or taken in combination, would not have disclosed or suggested Applicant's invention.

In addition to the foregoing, the following additional remarks from Applicant's foreign representative are also submitted in support of traversal of the rejection and patentability of Applicant's claims.

As to Item 10 on pages 4-9 of the Office Action, Applicant respectfully submits that, regarding clarified Claims 1 and 11, the invention defined clearly has a constitution which is "the illumination control means for controlling an illumination start time and an illumination "on" time of each of the illumination areas of the illumination unit in response to a result of the comparison of a new display data with a previous display data." Any one of the references to Okumura et al. and Chen does not disclose the above stated constitution (the essential features) of the present invention, such as in Claims 1 and 11, e.g., "the illumination control means for controlling an illumination start time and an illumination "on" time of each of the illumination areas of the illumination unit in response to a result of the comparison of a new display data with a previous display data." Even if the invention of Okumura et al. could be combined with the invention of Chen, it does not have the same constitution defined in Claims 1 and 11 of the present invention. As well, the references to Okumura et al. and Chen also do not disclose that the "illumination

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"lighting controller" has the constitution in which the above discussed comparison is carried out (performed).

As a result of all of the foregoing, it is respectfully submitted that the applied art would not support a §103 obviousness-type rejection of Applicant's claims. Accordingly, reconsideration and withdrawal of such §103 rejection, and express written allowance of all of the rejected claims, are respectfully requested.

#### **RESERVATION OF RIGHTS**

It is respectfully submitted that any and all claim amendments and/or cancellations submitted within this paper and throughout prosecution of the present application are without prejudice or disclaimer of any scope or subject matter. Further, Applicant respectfully reserves all rights to file subsequent related application(s) (including reissue applications) directed to any/all previously claimed limitations/features which have been subsequently amended or cancelled, or to any/all limitations/features not yet claimed, i.e., Applicant continues (indefinitely) to maintain no intention or desire to dedicate or surrender any limitations/features of subject matter of the present application to the public.

#### **EXAMINER INVITED TO TELEPHONE**

The Examiner is invited to telephone the undersigned at the local D.C. area number 703-312-6600, to discuss an Examiner's Amendment or other suggested action for accelerating prosecution and moving the present application to allowance.

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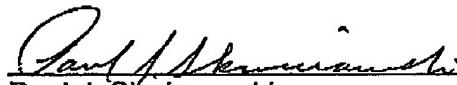
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### CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully submits that the claims listed above as presently being under consideration in the application are in condition for allowance. Accordingly, early allowance of such claims is respectfully requested.

This Amendment is being filed without any imposed shortened statutory period for response, and therefore, no Petition or extension fee is believed required. To whatever other extent is actually required, Applicant respectfully petitions the Commissioner for an extension of time under 37 CFR §1.136. A Form PTO-2038 is attached which authorizes the additional claims fees required for entry of this paper. Please charge any actual deficiency in fees to ATS&K Deposit Account No. 01-2135 (as Case No. 503.39221CX1).

Respectfully submitted,



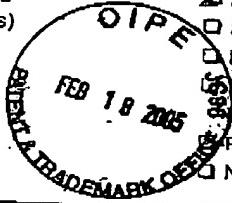
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Attachment:  
PTO-2038 (Fee Codes 1201/1202)

Patent Dkt. No. 503,39221CX1 Attorney Initials PJS:pii  
Application No. 10/735,725 Filing Date 16 December 2003  
Applicant(s) Tsunenori YAMAMOTO et al.  
Papers Filed Herewith on 18 February 2005

Receipt is hereby acknowledged of the papers filed as indicated by the checked items  
in connection with the above-identified application:

- New Application Transmittal Form       Credit Card Payment Form PTO-2038  
      Pages of Specification (      claims)      Fees \$ 500 (Codes 1201/1202)  
 Sheets of Drawings  
 Declaration (      pages)  
 Fee Transmittal Form  
 Claim for Priority  
 Priority Documents  
 Assignment Papers  
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